



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/645,254   | 08/21/2003  | Thierry Lucidarme    | 218728-000196       | 7563             |
| 21906  | 7590        | 11/02/2006           | EXAMINER            |                  |
| TROP PRUNER & HU, PC<br>1616 S. VOSS ROAD, SUITE 750<br>HOUSTON, TX 77057-2631 |             |                      | YUN, EUGENE         |                  |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
|  |             |                      | 2618                |                  |

DATE MAILED: 11/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/645,254             | LUCIDARME ET AL.    |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Eugene Yun             | 2618                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 09 August 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 22-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Jalali et al. (US 6,154,659).

Referring to Claim 1, Jalali teaches a method of transmitting a radio signal with polarization diversity (see col. 18, lines 52-55), comprising the steps of: transmitting a plurality of versions of the radio signal having different polarizations from a first station to a second station (see col. 17, lines 45-48); and adaptively controlling respective transmission powers of said versions of the radio signal (see col. 3, lines 16-23) according to measurements carried out by the first station on signals transmitted by the second station (see col. 3, lines 8-15).

Claim 10 has similar limitations as claim 1.

Referring to Claim 2, Jalali also teaches said versions of the radio signal transmitted simultaneously (see col. 17, lines 29-31).

Referring to Claim 3, Jalali also teaches an optimal transmission power distribution of the radio signal between the polarizations estimated on the basis of minimizing a cost function relative to a quality of the signal received by the second

station, and the transmission power is distributed between said versions of the radio signal in accordance with the estimated distribution (see col. 3, lines 60-65).

Referring to Claim 4, Jalali also teaches the cost function to be minimized measures an error probability in receive mode (see col. 25, lines 12-16).

Referring to Claim 5, Jalali also teaches transmission parameters for signals transmitted by the second station to the first station and parameters for the receiving by the second station of said versions of the radio signal transmitted with polarization diversity by the first station are measured, and said measured parameters are transmitted to the first station in order to estimate the optimal transmission power distribution (see col. 3, lines 60-65).

Referring to Claim 6, Jalali also teaches said second station is designed to transmit with polarization diversity, the method further comprising the steps of:

- for each transmit polarization, measuring a mean power contribution of at least some of the signals transmitted by the second station (see col. 9, lines 57-65);

- for at least some of the signals transmitted in a defined polarization by the first station to the second station, measuring a mean power contribution of the noise that interferes in receive mode with the useful signal relating to said transmitted signal (see col. 10, lines 5-15); and

- for each transmit polarization, evaluating at the first station power transfer coefficients in a radio propagation channel of at least some of the signals transmitted by the second station (see col. 10, lines 35-42).

Referring to Claim 7, Jalali also teaches the mean noise power contribution and mean transmission power contribution measurement steps are executed in the second station and the measured mean noise power contribution and mean transmission power contribution are transmitted to the first station for estimating the optimal distribution of the transmission power (see col. 10, lines 43-52)

Referring to Claim 8, Jalali also teaches said second station is designed to transmit with polarization diversity, wherein the mean power contribution of the signals transmitted by the second station is substantially identical for each polarization, the method further comprising the steps of:

measuring a mean power contribution of at least some of the signals transmitted by the second station (see col. 9, lines 57-65);

for at least some of the signals transmitted in a defined polarization by the first station to the second station, measuring a mean power contribution of the noise that interferes in receive mode with the useful signal relating to said transmitted signal (see col. 10, lines 5-15); and

for each transmit polarization, evaluating at the first station power transfer coefficients in a radio propagation channel of at least some of the signals transmitted by the second station (see col. 10, lines 35-42).

Referring to Claim 9, Jalali also teaches the mean noise power contribution and mean transmission power contribution measurement steps are executed in the second station and the measured mean noise power contribution and mean transmission power

Art Unit: 2618

contribution are transmitted to the first station for estimating the optimal distribution of the transmission power (see col. 10, lines 44-52).

Referring to Claim 11, Jalali also teaches the transmission means are coupled to  $n_{pol}$  antennas,  $n_{pol}$  being a number greater than or equal to two, and are designed to transmit from each antenna a radio signal in one polarization from among  $n_{pol}$  polarizations (see col. 17, lines 29-31).

Referring to Claim 12, Jalali also teaches the means for adaptively controlling the transmission powers comprise means for estimating an optimal distribution of the transmission power of the signals transmitted with a defined polarization, on the basis of minimizing a cost function relating to the quality of the signal received by the remote station, and means for driving the transmission means so as to distribute the transmission power according to the estimated distribution (see col. 3, lines 60-65).

Referring to Claim 13, Jalali also teaches the means for estimating the optimal transmission power distribution comprise means for minimizing an error probability in receive mode by the remote station (see col. 25, lines 12-16).

Referring to Claim 14, Jalali also teaches means for obtaining parameters for the transmitting of signals by the remote signal and for the receiving of signals transmitted to the remote station, cooperating with the means for estimating the optimal transmission power distribution (see col. 3, lines 60-65).

Referring to Claim 15, Jalali also teaches receiving means coupled to the  $n_{pol}$  antennas sensitive in receive mode to the  $n_{pol}$  polarizations, and wherein the means for estimating the optimal transmission power distribution cooperate with means for

Art Unit: 2618

obtaining parameters for the transmitting of signals by the remote station and for the receiving of signals transmitted to the remote station and with means for obtaining parameters for the receiving of signals transmitted by the remote station (see col. 3, lines 60-65).

Referring to Claim 16, Jalali also teaches means for obtaining, for each of the  $n_{pol}$  polarizations, a mean power contribution of at least some of the signals transmitted by the remote station and means for estimating power transfer coefficients for signals transmitted by the remote station in each of the  $n_{pol}$  polarizations and received on each of the  $n_{pol}$  antennas (see col. 18, lines 28-36).

Referring to Claim 17, Jalali also teaches means for obtaining a mean power contribution of at least some of the signals transmitted by the remote station and means for determining power transfer coefficients for signals transmitted by the remote station in each of the  $n_{pol}$  polarizations and received on each of the  $n_{pol}$  antennas (see col. 18, lines 28-36).

Referring to Claim 18, Jalali also teaches means for estimating symbols transmitted by the remote station in each of the  $n_{pol}$  polarizations, and received on each of the  $n_{pol}$  antennas, and means for combining the estimated symbols (see col. 18, lines 28-36).

Referring to Claim 19, Jalali also teaches means for obtaining, for at least one of the signals transmitted to the remote station in one defined polarization among  $n_{pol}$ , a measurement of a mean power contribution of the noise that interferes with the useful signal relating to said transmitted signal (see col. 9, lines 57-65).

Referring to Claim 20, Jalali also teaches means for measuring, for each of the  $n_{pol}$  transmission polarizations, a mean power contribution of at least some of the signals transmitted by the remote station (see col. 10, lines 5-15).


Referring to Claim 21, Jalali also teaches that  $n_{pol}=2$  (see col. 18, lines 35-36).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eugene Yun whose telephone number is (571) 272-7860. The examiner can normally be reached on 9:00am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew D. Anderson can be reached on (571)272-4177. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
MATTHEW ANDERSON  
SUPERVISORY PATENT EXAMINER